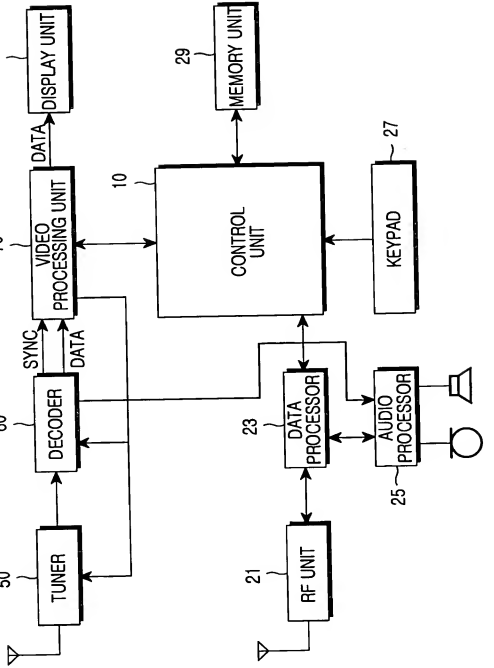

80
DISPLAY UNIT
DATA
29
MEMORY UNIT
70
VIDEO PROCESSING UNIT
10
CONTROL UNIT
27
KEYPAD
SYNC
DATA
60
DECODER
23
DATA PROCESSOR
AUDIO PROCESSOR
25
50
TUNER
21
RF UNIT

FIG.1

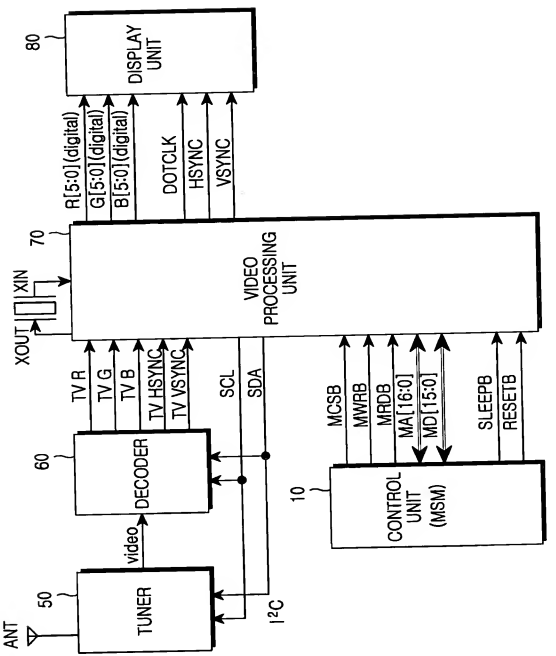

ANT
50
TUNER
video
60
DECODER
TV R
TV G
TV B
TV HSYNC
TV VSYNC
SCL
SDA
I2C
XOUT
XIN
70
VIDEO PROCESSING UNIT
R[5:0](digital)
G[5:0](digital)
B[5:0](digital)
DOTCLK
HSYNC
VSYNC
80
DISPLAY UNIT
10
CONTROL UNIT (MSM)
MCSB
MWRB
MRDB
MA[16:0]
MD[15:0]
SLEEPB
RESETB

FIG.2

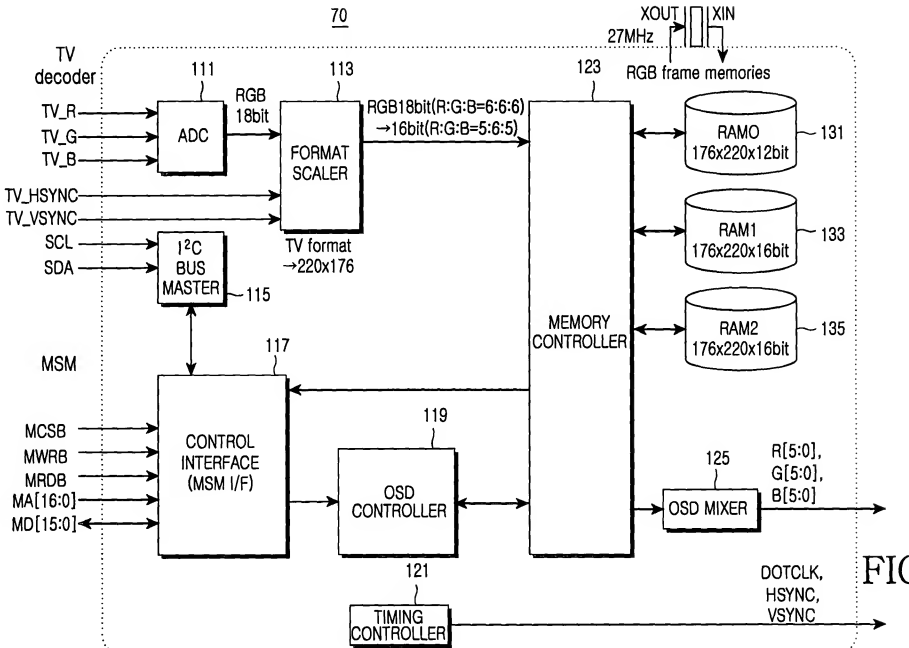

70
XOUT
XIN
27MHz
RGB frame memories
TV decoder
111
113
123
TV_R
TV_G
TV_B
ADC
RGB 18bit
FORMAT SCALER
RGB18bit(R:G:B=6:6:6) →16bit(R:G:B=5:6:5)
RAM0 176x220x12bit
131
TV_HSYNC
TV_VSYNC
RAM1 176x220x16bit
133
SCL
SDA
I²C BUS MASTER
115
TV format →220x176
RAM2 176x220x16bit
135
MEMORY CONTROLLER
MSM
117
MCSB
MWRB
MRDB
MA[16:0]
MD[15:0]
CONTROL INTERFACE (MSM I/F)
119
OSD CONTROLLER
125
OSD MIXER
R[5:0], G[5:0], B[5:0]
121
TIMING CONTROLLER
DOTCLK, HSYNC, VSYNC

FIG.3

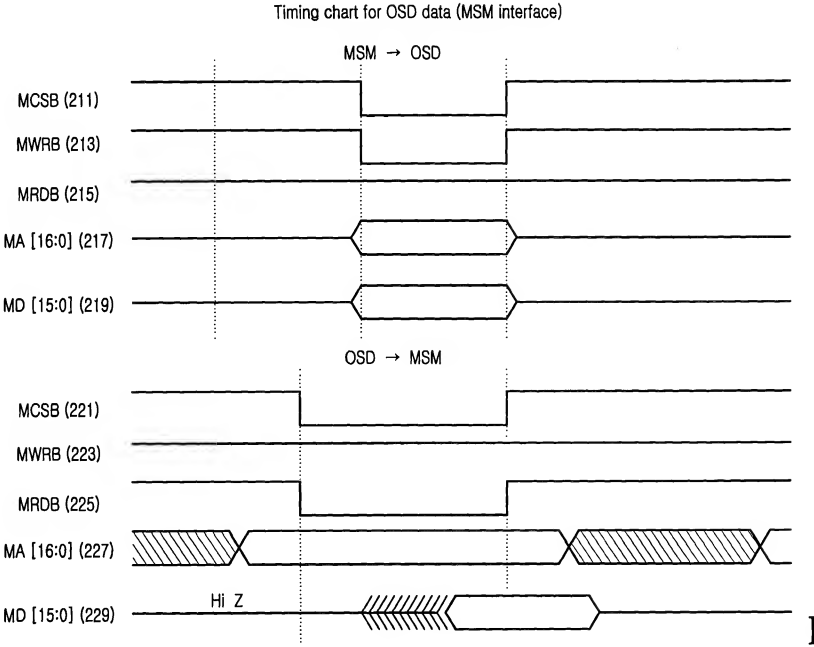
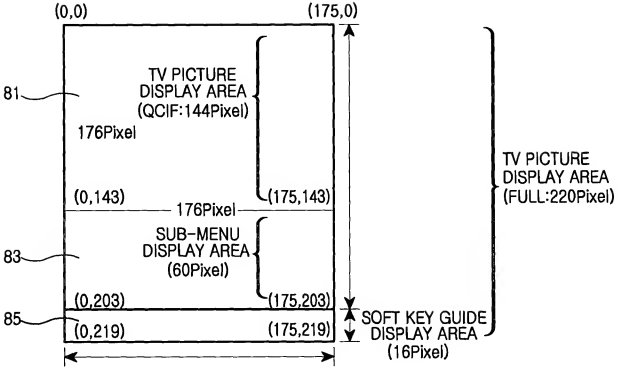

Timing chart for OSD data (MSM interface)
MSM → OSD
MCSB (211)
MWRB (213)
MRDB (215)
MA [16:0] (217)
MD [15:0] (219)
OSD → MSM
MCSB (221)
MWRB (223)
MRDB (225)
MA [16:0] (227)
MD [15:0] (229)
Hi Z

FIG.4



* SUB-MENU DISPLAY AREA COORDINATES ON LCD
FONT SIZE (18*19)*3ROW = 57PIXEL + MARGIN 3PIXEL = 60PIXEL
* TV PICTURE DISPLAY AREA (IF FULL) → 176X220 ALL USED

FIG.5

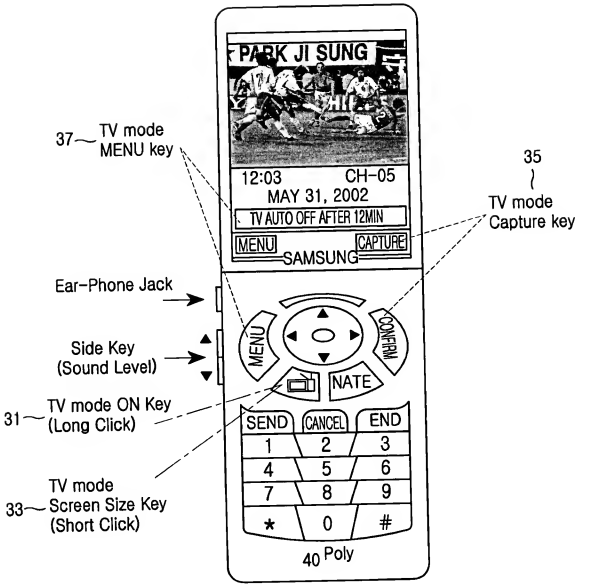

PARK JI SUNG
12:03 CH-05
MAY 31, 2002
TV AUTO OFF AFTER 12MIN
MENU
CAPTURE
SAMSUNG
37 TV mode MENU key
35 TV mode Capture key
Ear-Phone Jack
Side Key (Sound Level)
31 TV mode ON Key (Long Click)
33 TV mode Screen Size Key (Short Click)
MENU
CONFIRM
NATE
SEND
CANCEL
END
1 2 3
4 5 6
7 8 9
* 0 #
40 Poly

FIG.6

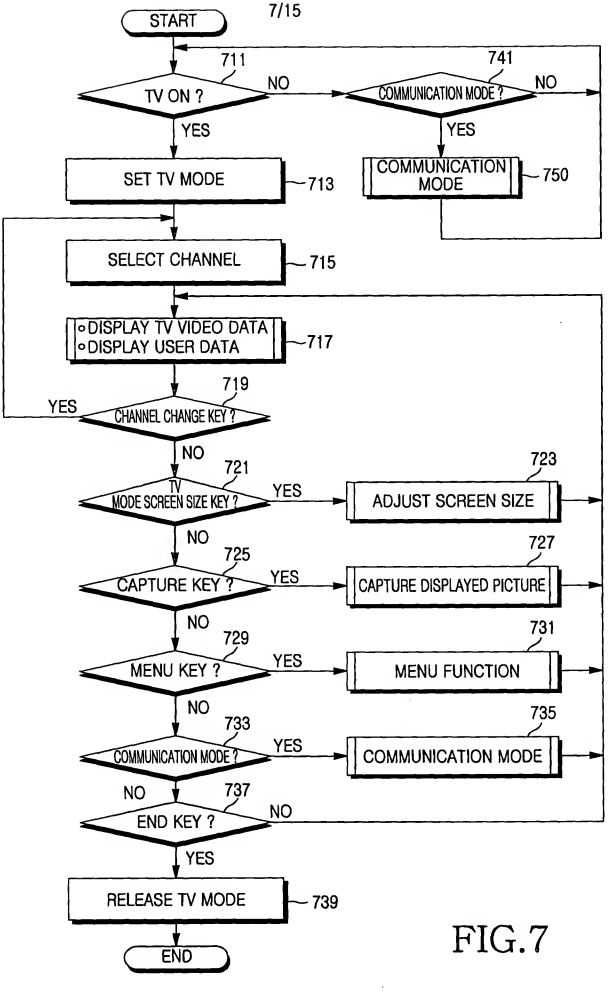

START
711
TV ON ?
NO
YES
741
COMMUNICATION MODE ?
NO
YES
SET TV MODE
713
COMMUNICATION MODE
750
SELECT CHANNEL
715
∘DISPLAY TV VIDEO DATA
∘DISPLAY USER DATA
717
719
YES
CHANNEL CHANGE KEY ?
NO
721
TV MODE SCREEN SIZE KEY ?
YES
723
ADJUST SCREEN SIZE
NO
725
CAPTURE KEY ?
YES
727
CAPTURE DISPLAYED PICTURE
NO
729
MENU KEY ?
YES
731
MENU FUNCTION
NO
733
COMMUNICATION MODE ?
YES
735
COMMUNICATION MODE
NO
737
END KEY ?
NO
YES
RELEASE TV MODE
739
END

FIG.7

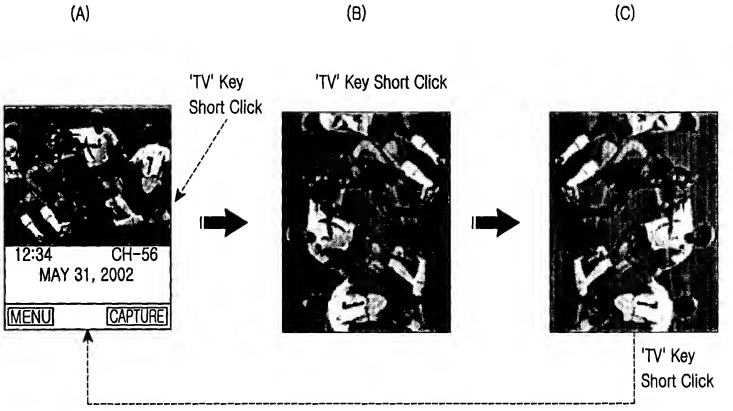

(A)
(B)
(C)
'TV' Key
Short Click
'TV' Key Short Click
12:34 CH-56
MAY 31, 2002
MENU
CAPTURE
'TV' Key
Short Click

FIG.8

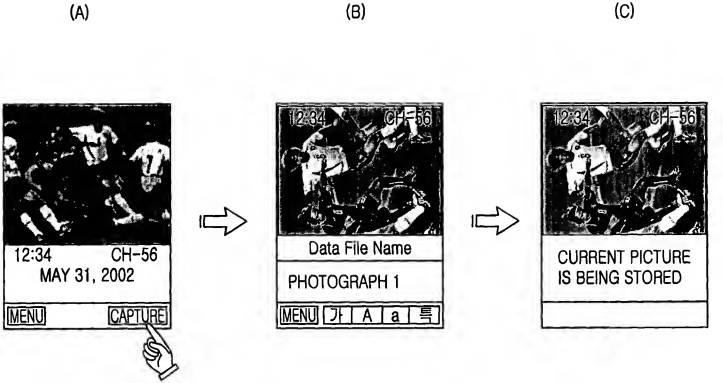

(A)
(B)
(C)
12:34 CH-56
MAY 31, 2002
MENU
CAPTURE
12:34 CH-56
Data File Name
PHOTOGRAPH 1
MENU 가 A a 특
12:34 CH-56
CURRENT PICTURE
IS BEING STORED

FIG.9

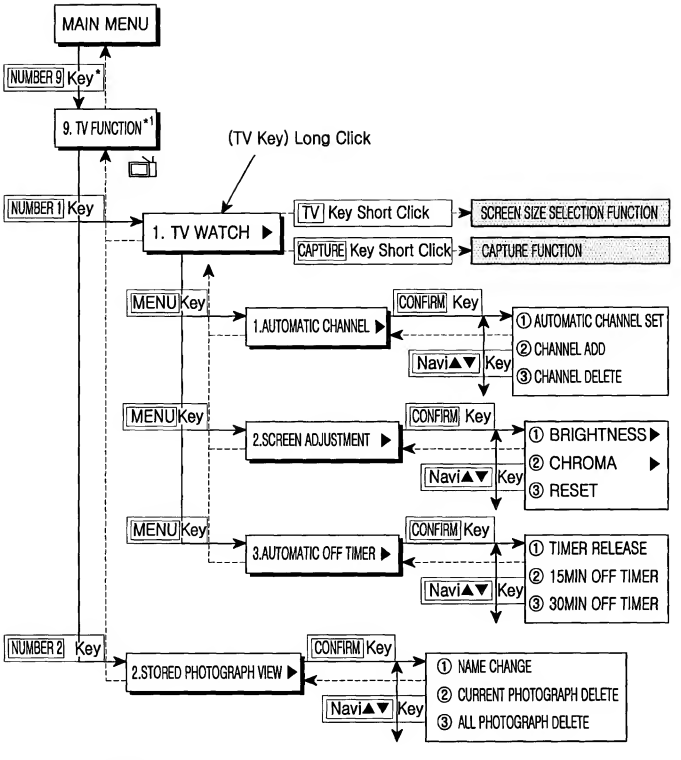

MAIN MENU
NUMBER 9 Key*
9. TV FUNCTION*1
(TV Key) Long Click
NUMBER 1 Key
1. TV WATCH ▶
TV Key Short Click
SCREEN SIZE SELECTION FUNCTION
CAPTURE Key Short Click
CAPTURE FUNCTION
MENU Key
1.AUTOMATIC CHANNEL ▶
CONFIRM Key
① AUTOMATIC CHANNEL SET
② CHANNEL ADD
③ CHANNEL DELETE
Navi▲▼ Key
MENU Key
2.SCREEN ADJUSTMENT ▶
CONFIRM Key
① BRIGHTNESS ▶
② CHROMA ▶
③ RESET
Navi▲▼ Key
MENU Key
3.AUTOMATIC OFF TIMER ▶
CONFIRM Key
① TIMER RELEASE
② 15MIN OFF TIMER
③ 30MIN OFF TIMER
Navi▲▼ Key
NUMBER 2 Key
2.STORED PHOTOGRAPH VIEW ▶
CONFIRM Key
① NAME CHANGE
② CURRENT PHOTOGRAPH DELETE
③ ALL PHOTOGRAPH DELETE
Navi▲▼ Key
* DIRECT ACCESS FUNCTION
* <---- (RETURN TO UPPER MENU): CANCEL KEY

FIG.10

FIG.11A

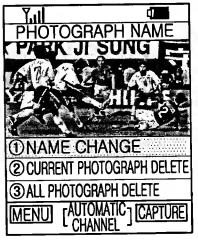


FIG.11B

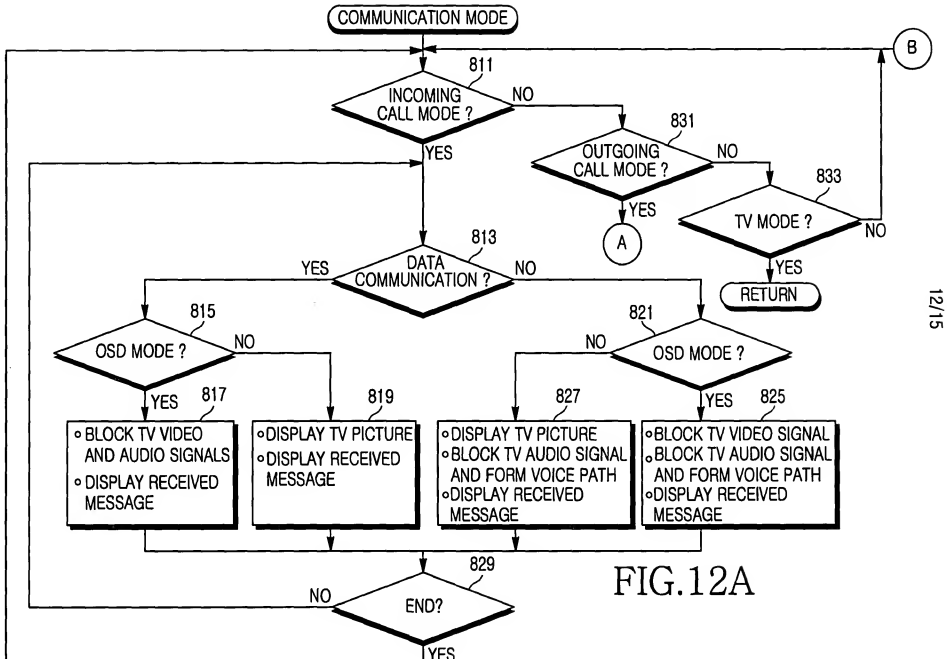

COMMUNICATION MODE
811
INCOMING CALL MODE ?
NO
YES
831
OUTGOING CALL MODE ?
NO
YES
A
833
TV MODE ?
NO
YES
RETURN
B
813
DATA COMMUNICATION ?
YES
NO
815
OSD MODE ?
NO
YES
817
∘BLOCK TV VIDEO AND AUDIO SIGNALS
∘DISPLAY RECEIVED MESSAGE
819
∘DISPLAY TV PICTURE
∘DISPLAY RECEIVED MESSAGE
821
NO
OSD MODE ?
YES
827
∘DISPLAY TV PICTURE
∘BLOCK TV AUDIO SIGNAL AND FORM VOICE PATH
∘DISPLAY RECEIVED MESSAGE
825
∘BLOCK TV VIDEO SIGNAL
∘BLOCK TV AUDIO SIGNAL AND FORM VOICE PATH
∘DISPLAY RECEIVED MESSAGE
829
NO
END?
YES

FIG.12A

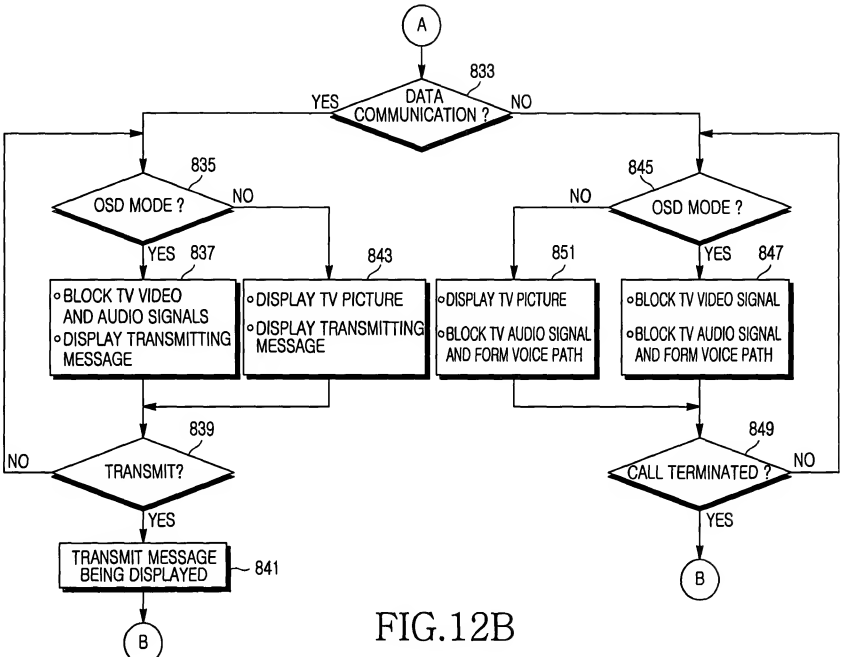

A
833
DATA COMMUNICATION ?
YES
NO
835
OSD MODE ?
NO
YES
837
BLOCK TV VIDEO AND AUDIO SIGNALS
DISPLAY TRANSMITTING MESSAGE
843
DISPLAY TV PICTURE
DISPLAY TRANSMITTING MESSAGE
845
NO
OSD MODE ?
YES
851
DISPLAY TV PICTURE
BLOCK TV AUDIO SIGNAL AND FORM VOICE PATH
847
BLOCK TV VIDEO SIGNAL
BLOCK TV AUDIO SIGNAL AND FORM VOICE PATH
839
NO
TRANSMIT?
YES
841
TRANSMIT MESSAGE BEING DISPLAYED
B
849
CALL TERMINATED ?
NO
YES
B

FIG.12B

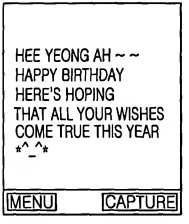


FIG.13A

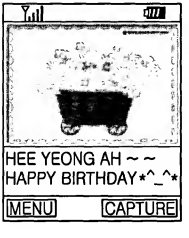


FIG.13B

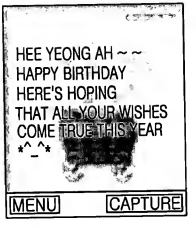

HEE YEONG AH ~ ~
HAPPY BIRTHDAY
HERE'S HOPING
THAT ALL YOUR WISHES
COME TRUE THIS YEAR
MENU
CAPTURE

FIG.13C